



A JSC team has come up with a hazardous waste tracking system that will be used throughout the agency. Story on Page 3.



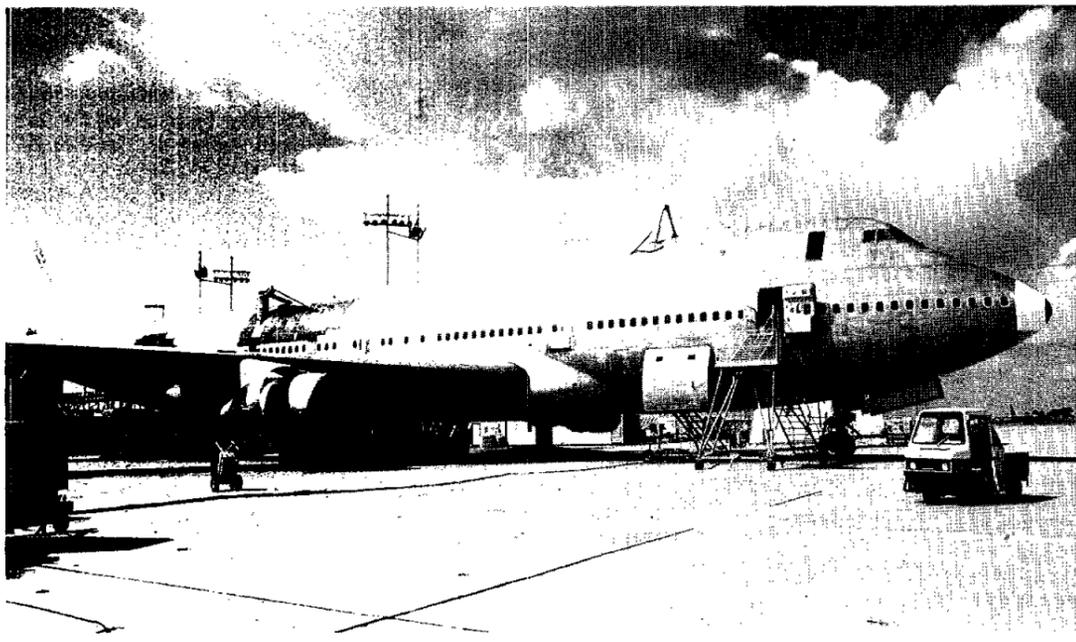
Space News Roundup won't be published next week because of the Thanksgiving Day holiday. Holiday deadlines on Page 2.

Space News Roundup

Vol. 29

November 16, 1990

No. 46



NASA Photo

NASA's new Shuttle Carrier Aircraft undergoes modifications at Boeing Military Airplanes' facilities in Wichita, Kan. The aircraft will be delivered to NASA on Tuesday, complete with a new paint job. NASA contractor employees will be allowed to view the refurbished plane at Ellington.

Ferry fleet doubles in size

Second shuttle carrier in limelight at Ellington

By Jeff Carr

After a decade of safe and reliable space shuttle shuffling, NASA's Boeing-747 Shuttle Carrier Aircraft will be joined by a sister ship next week.

JSC will take delivery of the second SCA, NASA-911, at Boeing Military Airplanes' facilities in Wichita, Kan., on Tuesday.

Following delivery ceremonies in Wichita, SCA 2 will be piloted by its JSC crew to Ellington Field in Houston before continuing to El Paso the following morning. There, it will be managed and maintained by JSC's aircraft maintenance contractor, Northrup Worldwide Aircraft Services Inc.

Pilots Joe Algranti, Ace Beall and Skip Guidry will fly NASA-911 into Ellington between 3 and 4 p.m. Tuesday. NASA and contractor employees interested in viewing the airplane that afternoon are welcome to drop by Hangar 990 between 3 and 5 p.m.

After successfully supporting the Shuttle Approach and Landing Test program in 1977, the first SCA, NASA-905, lent its sturdy airframe to the ferrying of the multi-billion dollar space shuttle fleet from manufacturing facilities and landing sites to KSC for launch processing.

While NASA-905 has met all shuttle program needs

Please see **SECOND**, Page 4

Weather threatens earliest attempt to launch Atlantis

By Kyle Herring

High winds at the launch pad and Shuttle Landing Facility threatened yesterday's scheduled launch of *Atlantis* on the STS-38 Department of Defense mission.

With no orbiter hardware issues in the way, launch from Pad 39A was scheduled during a four hour period opening at 5:30 p.m. CST Thursday. As of noon Thursday, the countdown was proceeding smoothly.

Weather in the launch area remained the major concern for *Atlantis*'s seventh flight.

A high pressure system over the Carolinas pushed easterly winds and clouds across the Florida peninsula.

Conditions expected at the time of the night launch included scattered to broken clouds from 4,000 to 7,000 feet and crosswinds exceeding 12 knots at the pad and SLF.

A slight chance of rain showers within the 30 mile restrictive zone also was probable. Forecasters said there was a probability of 60 percent that weather would violate launch and Return to Launch Site weather constraints.

Weather conditions were expected to improve, and forecasters predicted a 70 percent chance of favorable weather today and Saturday.

The crew for the mission arrived at Kennedy Space Center on Tuesday for final training in the NASA T-38 jets and Shuttle Training Aircraft.

The crew for the seventh Department of Defense-dedicated mission includes Commander Dick Covey and Pilot Frank Culbertson. Mission Specialists are Carl Meade, Robert Springer and Sam Gemar.

Covey is making his third shuttle flight and Springer is making his second. The remaining crew members are making their first space flights aboard the shuttle.

Work this week to prepare *Atlantis* for the mission was routine. Activities completed include

activating the orbiter's communications system, testing orbiter navigation aids, preparing the tail service masts for launch and installing the crew seats in the crew cabin.

The Rotating Service Structure was moved to the launch position away from the vehicle Wednesday afternoon and the gaseous oxygen vent arm was prepared for launch. The inertial measurement units also were activated and warmed up.

Meanwhile, analysis of a substance found two weeks ago in KSC's Orbiter Processing Facility has revealed that the substance was not cocaine, as originally suspected.

Officials said Wednesday the white powder turned out to be calcium hydrogen phosphate, which is commonly found in high school chemistry sets, and polyethylene oxide. Neither is a controlled substance.



STS-38

Mother lode of support just waiting to be tapped into

[Editor's note: With 17 years of cigarette smoking behind him and a Jan. 1, 1991, deadline for a smoke-free work environment ahead of him, Public Affairs Specialist Brian Welch is trying to quit. This is the last of eight installments.]

By Brian Welch

Eight weeks ago, I was convinced that the biggest dummy on the planet was me.

Now, two months later, I've been smoke-free for going on one month, I haven't killed anyone nor tormented any small animals, and I think I might have at least a decent shot at going the distance. I'm still not comfortable discussing time or distance, of course. This is, after all, still a one-day-at-a-time proposition, and there's no sense in letting you believe otherwise. I suspect that tentative

sense of things may linger for at least a couple of months, yet it is clear that the hardest part is over.

For those of you who are looking ahead to Jan. 1 and the beginning of JSC's days as a smoke-free environment, for those of you thinking about quitting, let me tell you there is a rich lode of potential help and concern out there if you are of a mind to ask for it.

First and foremost on the list of helpful things you ought to check into are the smoking cessation classes presented on JSC's behalf by some very nice folks from Methodist Hospital.

Some 59 of us signed up for the first two classes. Eight weeks later, only seven people

have dropped out. Of the 52 who remained, 60 percent have quit smoking as of this date.

My friends, this is a success rate that is nothing short of phenomenal! Of the 40 percent who have not yet quit, most are down to but a few cigarettes a day, and nearly all of those say they do plan to quit sometime in the near future, probably before the first of the year.

As for my own class, remember the woman who said that she would have robbed a Stop 'N Go in the middle of the night to get a pack of smokes? I'm proud to report that she has gone more than three weeks without a cigarette. So has the man who went through our initial 24-hour cessation period totally medicated

following minor surgery.

Beth Hall, who coordinated this success story for the Training Office, said dates are being firmed up for another smoking cessation class (or classes, if demand is high enough), and it probably will begin right after the holidays. She also said the intent is to form a support group for former smokers, and anyone who was in the first two classes is welcome to sit in on the class starting in January. If you are interested in follow-up sessions or attending the new class, call Beth at x33078.

If you do decide to quit, I urge you to share that determination with your friends and co-workers. It can help. In my own case, I knew from experience that skulking about and not setting too strong a goal for myself

Please see **CENTER**, Page 4

Space Center Houston financing shaping up

Financing for Space Center Houston is coming together with the help of a \$10 million budget appropriation from Congress and a letter of credit from a major Japanese bank.

The progress means that construction of the new JSC visitor center—expected to attract more than 2 million people annually—could begin soon after the first of the year, said Harold Stall, JSC director of public affairs and president of the Manned Space Flight Education Foundation Inc.

Survey work already has begun on the 123-acre site just inside JSC's main gate, and if current plans hold up, the new "experience center"

could open its doors in the spring of 1992.

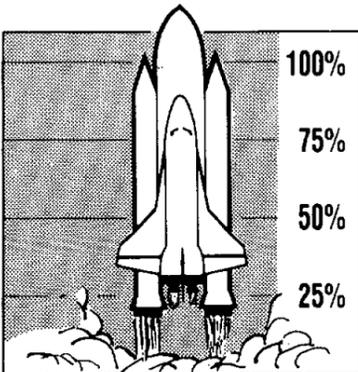
Stall said the appropriation in the recently passed fiscal 1991 budget puts the Congressional stamp of approval on the project, which should help MSFEFI, the non-profit organization formed to develop Space Center Houston, attract private financing.

"We set out to do the entire program with private financing, but after it was reviewed by the House Appropriation Committee's staff, a decision was made to support the program with federal funds as well," Stall said.

Please see **FINANCING**, Page 4



in the middle of the night to get a pack of smokes? I'm proud to report that she has gone more than three weeks without a cigarette. So has the man who went through our initial 24-hour cessation period totally medicated



Grand Total: \$367,735



JSC presenters featured at Technology 2000 expo

By Kari Fluegel

American businesses will have the opportunity to feast at a smorgasbord of technology during an unprecedented showcase of aerospace technology Nov. 27-28 in Washington, D.C.

Technology 2000, the first industrial exposition and conference about the transfer of NASA technology, will feature speakers and exhibitors from NASA and its contractors addressing prior and potential spinoffs of the agency's research.

"There's a wealth of technology here that is not being taken advantage of," said Dean Glenn, JSC's Technology Utilization Officer. Throughout its existence, NASA

has spun technology into the private sector for the development of goods and services to benefit the average consumer. Glenn said spinoffs are hard to track, and that only 30 percent of the spinoffs used by private companies probably have been identified or reported to NASA.

Still, there remains an abundance of untapped technological opportunities for non-aerospace businesses, and the need for an introduction to the available technologies.

Several individuals representing JSC will deliver presentations during the two-day Technology 2000. "Intelligent Computer Aided Training and Tutoring" will be led by Robert

Please see **TECHNOLOGY**, Page 4

JSC

Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Gift Store from 10 a.m. to 2 p.m. weekdays.

General Cinema (valid for one year): \$3.75 each.

AMC Theater (valid until May 1991): \$3.50 each.

Sea World (San Antonio, year long): adults, \$17.25, (2-day \$21.95); children (age 3-11) \$14.75, (2-day \$18.95).

Texas Renaissance Festival (Saturdays and Sundays, Oct. 6-Nov. 18): child, \$4.95; adult, \$8.95.

Dickens on the Strand (Dec. 1-2, Galveston): child (6-12), \$2; adult, \$4; seniors, \$2. (Tickets go on sale Nov. 1).

Christmas Tree Sale (Nov. 13-28 purchase ticket to select a tree Dec. 1): \$17.

Andy Williams Christmas Show (6 p.m. Nov. 28, Jones Hall): \$20.

JSC

Gilruth Center News

Sign up policy—All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a badge or EAA membership card. Classes tend to fill up four weeks in advance.

EAA badges—Dependents and spouses may apply for a photo I.D. 6:30-9 p.m. Monday-Friday.

Defensive driving—Course is offered from 8 a.m.-5 p.m., Nov. 17-Dec. 15, Jan. 26. Cost is \$15.

Aerobics and exercise—Both classes are on-going.

Country and western—Next dance class begins Jan. 7 for beginners and intermediate. The six-week class meets Mondays. Cost is \$20 per couple.

Weight safety—Classes will be 8-9:30 p.m. Nov. 14 and Nov. 29. Cost is \$4.

Health Related Fitness Program—Includes screening by medical examination and a 12 week education component. For more information call the Physical Fitness Office at x30301.

Because of the Thanksgiving, Christmas and New Years Day holidays, Space News Roundup will not be published Nov. 23 or Dec. 28. Some deadlines will be affected.

The deadline for Jan. 4 Swap Shop ads will be 5 p.m. Wednesday, Dec. 19.

The deadline for receipt of information to be published in the Nov. 30 Dates and Data calendar of events will be 5 p.m. Wednesday, Nov. 21. The deadline for receipt of information for the Jan. 4 Dates and Data section will be 5 p.m. Wednesday, Dec. 26.

JSC

Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the deposit box outside Rm. 147 in Bldg. 2. No phone or fax ads accepted.

Property

Sale/Lease: 3-2-2 in Wedgewood Village, Friendswood, 1,650 sq. ft., new carpet/paint, cul-de-sac. James, 335-6710 or 482-6744.

Rent: Webs./Ellington, 2-1 apt., extras, \$425/mo. Dave, x38156 or Herb, x38161.

Lease: Baywind II townhome, 2-2.5, lg. 2-story unit, 1,130 sq. ft., FPL, W/D, fans, \$600/mo. x30715 or 280-8608.

Sale: Lake Travis, 1.5 lots, Panoramic Hilltop view, \$10K. Anne, x31138 or 332-4383.

Rent: La Porte, Fairmont Park, 3-2-2, near JSC, \$650/mo. plus dep. x36665 or 333-9733.

Lease: Scarsdale, 3-1-1, remod., new carpet/paint, \$450/mo. 484-4944.

Lease: Galv. Bay w/rtfrt., 2-2, block paneling, wood floors, decked 3 sides, fen., bulkheaded, hot tub, Gazebo, \$1,200/mo. 333-6277 or 339-3562.

Rent: 1 wk., Sat. to Sat., Pagosa Springs, CO, Ski Wolf Creek and Purgatory, 2-2, sleeps 8, Jacuzzi, loaded, you pick wk., Jan. 5-Apr. 20, \$580. Scott, x34614 or 334-2278.

Sale: Hot Spring Village, AR, wooded lot, util., improvements, \$13K, OBO. 333-6150 or 326-1254.

Sale: Kerrville, TX, 12x60 mobile home, furn., good cond., lg. CP, lg. cov. patio, \$6,500. 333-6150 or 326-1254.

Sale: Merritt Isle, FL, near KSC, 5-3-2 on 2.5 acres, zoned for horses, \$139K, OBO. 333-2299.

Rent: 2-1 duplex, 1K sq. ft., W/D conn., \$350/mo. plus \$150 dep., Monroe area. 335-2991.

Sale: Univ. Green, 2-1-2 patio home, fen., new paint, vaulted ceiling, miniblinds, drapes, fans, FPL, deck, \$76K. OBO. 470-7338.

Lease: CLC, 1 BR condo, fan, micro, appl. Jim Briley, 468-7901.

Sale/Rent: Galv. duplex investment property, 3 bks. from Ginos, rents for \$700/mo. or \$48K, possible owner fin., ex. cond. x36869 or 534-3554.

Sale: Dickinson, 8% VA assum., 3-2-5-3, lg. lot, formal, CA/H, stained glass windows, FPL, near NASA. x36869 or 534-3554.

Rent: Lake Travis cabin, priv. dock, C/A/C and heat, equipped, accomm. 8, dly/wkly rates, \$80/\$325. 326-5652.

Rent: Galv. condo, furn., sleeps 6, Seawall & 61st, diy/wkly/wknd rates, cable. x33479 or 486-0788.

Sale: Dickinson 3-2-2 brick, by owner, pool, spa, patio, FPL, lg. fam. rm. w/cathedral ceiling, formal DR, \$140K, assum. 8.5%. Chris, 337-5410 or 280-1944.

Sale: Pipers Meadow, 3-2-2.5, formal LR/DR, FPL, loft, wet bar, fans, gar. door opener, deck, new paint, near JSC, 10% assum., \$92K. Dennis, x34405 or 480-5076.

Sale: Univ. Green townhouse, 3-2-2, fans, FPL, whirlpool tub, alarm sys., deck, 2 min. to JSC, \$92K. Dennis, x34404 or 480-5076.

Sale: Bayfront lot in Seabrook, \$125; 2 wtr. view lots near NASA, \$38,500/ea. Don, x38039 or 333-1751.

Lease: CLC, Bay Forest II, 4-2.5-2, 2,600 sq. ft., long term desired, \$1,500/mo., principals. 488-4398.

Sale: Dickinson, 2 acres, Humble Camp Rd., improved prop., util. avail., \$12,500/acre, Texas City, 2-1-1, den, DR/LR, enclosed back porch, \$32,500, OBO. Shelly, 333-7153.

Sale: Lot at Westwood Shores on Lake Livingston, ex. golf course, marina, swimming pools, \$8,950. 480-9805.

Cars & Trucks

'35' Mailard motor home, loaded, low mi., \$29K. 337-4051.

'79 Buick LeSabre, 67K mi., ex. cond., 4-dr., \$2,950. Bowen Loftin, x38070.

'87 BMW 325, 2-dr., 5-sp., ex. cond., serv. rec., \$12K. Phil, x33283 or 353-0108.

'86 Yamaha FJ 1200, \$3,500, OBO. Terry, x36351 or 996-9164.

'89 Firebird, 13K mi., 12 mo. tune-up warr., \$9,700. Carrie, x38506 or 333-4089.

'68 Camaro SS/RS, ex. cond., 327 cu. in. auto., 2-spd. powerglide trans., new rims/tires, \$5,500. 280-2116 or 479-4463.

'81 Pontiac Grand Prix, good cond., \$1,800. Romeo, x31190.

'81 Dodge Omni, 2.2 liter, new tires/batt./brakes, ex. cond., 4-dr., \$950. 282-4623; '78 BMW 320i, 4-sp., AC, new tires/batt./brakes, ex. cond., 2-dr., \$3,150. 996-8022.

'87 Pontiac Gran Am, auto., 4-dr., low mi., \$6,150. x36588 or 358-9598.

'88 Subaru Sta-Wag (GL), ext. warr., loaded, 25K mi., \$7,495. 499-4717 or 658-7300.

'78 Corvette, Silver Anniversary, new carpet, factory mags, auto., 350, pwr., \$6,800. 488-5580.

'89 Camaro Rally Sport, 17K mi., \$9,500. Scott, x35969 or 554-2206.

'85 Dodge 4x4 Ram Charger, auto., towing pkg., good cond., \$4,395. x38456 or (409) 935-4198.

'83 Plymouth Turismo, 2-dr. hatchback, ex. cond., 61K mi., 5-sp., \$2,900, OBO. Dennis, x34405 or 480-5076.

'81 Monte Carlo, V8, auto., loaded, 78K mi., very good cond., \$2,800. x39216 or 482-5197.

'85 Pontiac Sunbird Coup, 5-sp., ex. cond., 110K mi., \$1,900. Michael, x34378 or 486-4983.

'88 Chevy K-5 Blazer, loaded, custom wheels, \$15,000. Doug, 997-7715.

'84 Dodge Ram Charger, low mi., ex. cond., \$5,300 nego. x33525 or 333-2395.

Cycles

'80 Honda CB 750 custom motorcycle, 2 helmets, new front tire/chain, \$800, 581-9242.

'80 Yamaha 650 special, good cond., 14k mi. 996-8365.

Boats & Planes

Aircraft propeller, Sensenich 74DM6-0-58, fits some Beech, Piper PA-18, PA-22, PA-28 series, \$900. 538-2299.

'87 18' Celebrity Bowrider, 165hp I/O, galv. trlr., new spare, stainless prop, cov., top, ex. cond., \$8,900, OBO. 286-3626.

'19' Robalo w/200hp Evin., \$6K, OBO; '91 Explorer, \$18,500. 334-1223.

'83 27' Chapparral w/rtfr., full head/galley, AC, new VHF/DF/Loran, sleeps 6, \$23K, BO. x31833 or 534-6073.

'89 19' Bayliner Bowrider, 125 motor, trlr., \$500 dn., obtain new loan. x31294 or 280-8855.

Audiovisual & Computers

IBM compat. computer, printer, monitor, hutch, \$1K, less than 2 yrs. old. 481-3032.

AT&T 6300, 20 Meg HD, monochrome monitor, \$795; 40 CPS Daisy wheel printer, \$200 or both PC & printer, \$950. Richeson, x37005 or 488-8761.

Bondwell pro 8T laptop XT, 1 Meg RAM, 2 720 K drives, superfast built in screen, built in modem, all ports, \$850. Jon, 282-5165 or 796-8225.

AT&T 6300 computer, 20 Meg HD, optical mouse, 640K RAM, all ports, ex. cond. w/SW, \$895. Jon, 282-5165 or 796-8225.

TI-994A computer w.assorted SW, access., \$150. Ed, x36969 or 332-0442.

Scuba dive computer, U.S. Divers Data Scan III, 1 mo. old, 1 yr. warr. replaces depth gauge, press. gauge, timer, \$550. Patrick, x32635 or 488-1079.

IBM compat. laptop computer, backlit screen, turbo, 1 Meg RAM, 2-720K drives, 1200 baud modem, case, SW, \$800. Michael, x34378 or 486-4983.

IBM XT computer, 640K mem., 30 MB HD, 2 floppies, AST 6-pak loaded mem., clocks, Texas color hires monitor, ex. cond., \$1,275 or trade for car or Mac SE computer and above. x30092 or 481-3637.

Intel 386 inboard PC, installs in your 8088 IBM, IBM XT. Compaq, or Radio Shack computer, Norton SI 16 plus speed, 2 yr. warr., \$375. x30092 or 481-3637.

512K RAM exp. for AMIGA 500, \$60; NEC P2200 24-pin printer, \$250. Joe, 996-1667.

Today

HSS meets—The Houston Space Society will meet at 7:30 p.m. Nov. 16 at the University of Houston Center Underground, Pacific Rm. Steven Williams, Lunar and Planetary Institute visiting research scientist, will discuss "Science vs. Pseudoscience." For more information call 639-4221.

Health Fair—The JSC Human Resources Office will sponsor a one-day Health Fair starting at 9 a.m. Nov. 16 in the Gilruth Center ballroom. Health care representatives will present their 1991 benefit packages to assist employees in making open season changes. For more information, call x32681.

Video course—JSC's Human Resources Office is sponsoring a televised Boston University course on product development and concurrent engineering. "Right the First Time" will be aired at 1 p.m. on Nov. 16 on JSC's television network; watch the program guide for the correct channel. Cross-functional teaming is the topic of the course and will be presented by Dan Dimancescu, a member of the Thayer School of Engineering at Dartmouth College. For more information contact Tim Johnson at x32604.

Cafeteria menu—Special: Salisbury steak. Entrees: baked scrod, broiled chicken with peach half. Soup: seafood gumbo. Vegetables: cauliflower au gratin, mixed vegetables, buttered cabbage, whipped potatoes.

Saturday

Chili Fest—The Administration Directorate will have a Chili Fest at 10 a.m. Nov. 17 at the Gilruth Pavilion. Tickets are \$3 for adults, children 12 and under free, the tickets are available through BA division secretaries. For

more information contact Marie McCright at x35903.

Monday

Cafeteria menu—Special: beef and macaroni. Entrees: ham steak, Parmesan steak. Soup: chicken and rice. Vegetables: green beans, carrots, au gratin potatoes.

Tuesday

BAPCO meeting—The Bay Area PC Organization will meet at 7:30 p.m. Nov. 20, at the League City Bank and Trust. For more information call Earl Rubenstein at 483-4807, or Tom Kelly at 996-5019.

Cafeteria menu—Special: Mexican dinner. Entrees: potato baked chicken, barbecue spare ribs. Soup: tomato. Vegetables: squash, ranch beans, Spanish rice, broccoli.

Wednesday

Cafeteria menu—Special: baked meatloaf with Creole sauce. Entrees: baked scrod, liver and onions, ham steak. Soup: seafood gumbo. Vegetables: beets, Brussels sprouts, green beans, whipped potatoes.

Thursday

Thanksgiving Day—Most JSC offices will be closed in observance of the Thanksgiving Day holiday.

Nov. 23

Cafeteria menu—Special: tuna and salmon croquette. Entrees: pork chop with yam rosette, Creole baked cod. Soup: seafood gumbo. Vegetables: Brussels sprouts, green beans, buttered corn, whipped potatoes.

Nov. 25

National technology conference—Technology 2000, a national technology conference, will convene

Nov. 27-28 at the Washington Hilton Hotel. For more information call 212-490-3999.

Nov. 28

HSBR luncheon—The Houston Space Business Roundtable will meet at 11:30 a.m. Nov. 28 at the Nassau Bay Hilton. The luncheon theme is "International Space Cooperation and its Potential Impact on Houston." Guest speaker will be Joseph P. Loftus, JSC assistant director for plans. For more information, contact John Mason at 333-4114.

Astronomy seminar—The JSC Astronomy Seminar will be at noon Nov. 28 in Bldg. 31, Rm. 129. Dr. T.F. Stepinski of the Lunar and Planetary Institute will speak on "A Cluster of Black Holes as a Model of Active Galactic Nuclei." For more information contact Al Jackson at 333-7679.

NAFE Network group—The National Association of Female Executives will meet at 11:30 a.m. Nov. 28 at the South Shore Harbour Country Club. Mary Jo Weible, president of Rockwell's National Management Association chapter, will present an overview of the Certified Manager Program. Deadline for reservations is Nov. 19. Cost is \$10 for lunch and program, \$3 for program only, and \$5 for non-members. For more information contact Sharon Westerman at 486-8927 or Wanda Spain x31025.

Dec. 5

IEEE video conference—IEEE Galveston Bay Section Video Conference on Fiber Optics Applications will be at 10:30 a.m. Dec. 5 at the Gilruth Center. Registration deadline is Nov. 30. For more information, call Andy Lindberg, x31474.

Musical Instruments

Korg Poly 800 digital program synthesizer, \$350, OBO; Yamaha RX 21 digital program drum mach., \$250, OBO. Jim, x30742 or 484-7721.

Cornet, good cond., \$80. Terry, 282-6796 or 474-5639.

Fender Mustang 6-string elec. guitar w/hard case, \$175. 283-5638 or 996-9701.

Yamaha alto saxophone, \$200. 473-9132.

Lost & Found

Lost 6-sp. Raleigh bike from Mission Control Center. Jon Axford, x37671.

Pets & Livestock

AKC Dalmation pup, 8 mos. old, shots, \$150. Jim, x30742 or 484-7721.

Exotic min. Vietnamese pot bellied pigs w/reg. papers, \$300-\$2,000/ea. 482-6744 or (409) 778-6976.

Exotic Australian Shepherd dogs, \$250/ea.; exotic finches, ring neck doves, guinea pigs, \$5/ea. 482-6744.

Chow pups, AKC, 10 wks. old, \$100-\$125. 333-7098 or 332-8858.

Rabbits, mini lops, New Zealand. Gailo, 554-6200.

Xmas Westies, AKC, born, 10-22-90, avail Dec. 22, \$500. 332-0210.

Baby hand-fed cockatiels, tame. Linda, 484-7834.

Free, 2 Cocker Spaniels, 2 yrs. old. x35913 or 280-0065.

3 AKC male Dachshund pups, shots, wormed, born 9-13-90, avail. 11-16-90, \$150. Michael, x34158 or 480-2152.

Hand fed Lutino cockatiel w/cage, \$75. John, x39418.

Photographic

Zoom lens \$20-200mm f4.5 Albinar, \$45; wide-angle 28mm f2.8, \$20, both for Canon A1 AE1, prog. etc., lens case, \$5. Jeff, x31974 or 286-1935.

Household

Queen mat., boxspring, Sertapedic Luxury, 5 yrs. old, \$150/set. Brad, x37999 or 474-5609.

Full sz. bed w/mat., frame, lt. walnut hdbd., \$100. R. Franco, 992-2711.

King sz. wtrbd., oak frame, cab. w/glass doors, \$250. x38587 or 480-9724.

G.E. port. W/D for apt., \$1150. Susan, 488-1313.

Wards elec. dryer, ex. cond., \$75, can deliver. 475-9671.

Full sz. matt., box spring, \$75, OBO. x38896 or 482-9447.

DR set, peacan-top table, cushioned swivel chairs, \$325; sideboard ext. table, ext. to 84", \$175. 333-9733.

Ethan Allen DR table, 4 chairs, china hutch, dk. pine, ex. cond., \$1,800. 472-0532.

Love seat, chair, end table, ottoman, Cargo furn., \$450. 332-0210.

Queen sz. wtrbd. w/heater, \$250; sofa, loveseat, \$350; DR table, 4 chairs, \$100, OBO. 282-4310 or 337-6829.

DR table, 6 chairs, 1.5 yrs. old, good cond., \$150; rattan couch, needs recov., \$25; baby stroller, \$20; playpen, \$10; swing, \$10; high chair, \$15; booster chair, \$5; Disney play gym, \$5. Heidi, x31332 or 554-5221.

Kenmore elec. dryer, \$125; cordless phone, \$25; Zenith 19" B/W TV, \$90; 36" 3-blade ceiling fans, 5-sp., \$20/ea. Danny, 282-4303.

Leather sofa w/matching chair, ottoman, \$5400, OBO. 480-6539.

Sears Kenmore elec. dryer, ex. cond., \$145. 473-9132.

Wanted

Want to trade concert/church elec. organ for 25' plus cabin cruiser, car or truck of equal value. 337-4051.

Want used educational SW for child in 2nd grade, SW for Apple IIe for 2nd grade and above, Math, Spelling, English, Science, History. 326-2540.

Want roommate, fem. to share house, South Belt area, \$250/mo. plus 1/2 util. 481-3032.

Want '79-'82 Honda Accord for parts. 940-5005.

Want calculators. 940-5005.

Want fem. roommate to share 4-2.5-2 house near JSC, non-smoker, \$325/mo. plus 1/3 util. 335-8521.

Want riders for vanpool starting from SW side and Braeswood-610 locations to JSC. Chau, x31451.

Want Gmeinhardt or Yamaha flute w/low B-flat key. Gailo, 554-6200.

Tracking Hazardous Waste



JSC develops agencywide system to help protect environment

By Kelly Humphries

JSC has just completed development of a new information management system that will help the space agency track its hazardous wastes from "cradle to grave" and protect the environment.

The NASA Institutional Environment Management System eventually will be used by nine NASA sites and six satellite facilities. The hazardous waste module is the first in a group of systems that will cover the gamut of environmental concerns.

The system will track hazardous waste from generation to collection, treatment, analysis, storage and disposal, and present the information in a format that helps each center deal with the maze of federal, state, county and local regulations and permits.

NIEMS also will allow each center to make sure that the transporters and disposers they hire are carrying up-to-date certifications, track spill or contamination incidents and document how they were handled and identify waste minimization opportunities.

"NASA is very much committed to environmental protection," said John Herrmann, chief of JSC's Environmental Services Office. "This is another way we demonstrate that we go beyond what the minimum requirements are."

Herrmann, who served as technical resource coordinator for NIEMS development, said the system was officially approved by representatives from all of the user centers following a systems performance test meeting last Thursday at JSC. The users group first checked out the completed system and later toured JSC's hazardous waste storage areas.

"That's the approval we needed to begin implementation around the agency," said Jon Symes, AIM systems manager in JSC's Information Systems Directorate.

NIEMS already has been installed on

JSC's mainframe computer. The acceptance testing process, which starts next week, will take two to three months because of the training and data entry necessary. Installation at Kennedy Space Center began this week. Installation at Goddard Space Flight Center is planned in December.

Herrmann said JSC was chosen to lead the effort because it is looked upon as having the expertise and the resources to perform the task. JSC and KSC have the most experience with hazardous waste management.

In 1989, JSC dealt with 3,167 tons of photographic waste, which includes photographic fixer, developer, bleaches and miscellaneous rinse waste water. JSC recently installed a new

underground containment system for that waste near Bldg. 8. The center also managed: 654 tons of metal plating and pre-cleaning waste used in clean room operation; 62,754 tons of cooling tower blowdown waste, which was treated on-site; 45 tons of waste oil, solvents and paint; two tons of lab pack chemicals, which are chemicals in their original containers that have passed their expiration dates or otherwise gone out of specification; and 266 tons of miscellaneous one-time generated waste such as that from close outs of tanks and clean up of spills, Herrmann said.

"People don't realize we generate as much as we do," he said. "We're the second largest photo processor in Texas."

JSC has always taken great care with its hazardous wastes, but the new system will provide a more efficient and effective way of keeping track. None of the wastes produced at JSC is acutely toxic, Herrmann said, but "anything that is mismanaged could be a threat to humans. The key is how you manage it and the facility you use."

"This is going to give us the ability to track and give us a lot of reporting capability for hazardous waste management," Herrmann said.

"This system was designed exclusively by and for the users," said Janet Montoya, who as assistant to Symes coordinated the recent system performance test and was at KSC this week for NIEMS installation.

Throughout the five-year development period, the environmental and computer representatives from each center discussed the system requirements and reviewed the design. Every facet of the system was carefully reviewed, and the center representatives were not bashful about saying when they thought something wouldn't work, she said.

"Many centers had pieces, but no one had everything," Montoya said.

NIEMS was developed under the detailed milestones of NASA's Automated Information Management program, which designates individual centers to develop systems for agencywide use. JSC previously has developed the NASA Personnel/Payroll System, the Consolidated

Agency Personnel/Payroll System and the NASA Training and Development System under the AIM program.

Harvey McClay was NIEMS project manager for Computer Sciences Corp., which did the actual computer system design under the Administrative Applications System Contract. A project team of 8-10 people worked on the system full-time, and the users committee was helpful, he said.

The system was a challenge because "environmentalists had not had a lot of automated systems support before," he said.

There was little precedent within NASA, McClay said, and it was difficult to develop a system that could meet a regulatory environment that changes slowly but implements its changes quickly.

A large coding effort was involved, Symes said, but the bulk of the work was in the design and development of a system flexible enough to handle a wide range of problems and regulations at sites across the country. NIEMS is heavily permit driven.

Symes said hazardous waste tracking is just the first of nine modules in a group of systems that will cover just about every environmental issue at NASA centers.

While there are no plans yet for a central database, the possibility is being discussed, Montoya said. A central system might follow the pattern of the Consolidated Agency Personnel/Payroll System, which integrates the information from each center's NASA Personnel/Payroll System database.

Other modules will cover ground water tank storage, effluent, air quality, asbestos, PCBs, planning, scheduling and budgeting and hazardous materials inventory reporting.

"This is just the first of nine modules to be implemented in environmental areas," Symes said. "We've made a major step, but we do have a lot of work ahead of us."

'NASA is very much committed to environmental protection. This is another way we demonstrate that we go beyond what the minimum requirements are.'

—John Herrmann,
Environmental Services Office chief



JSC Photos by Jack Jacob

Top: Environmental Services Office Chief John Herrmann, pointing, describes the operation at JSC's Hazardous Waste Storage Area at Bldg. 358 for representatives from other NASA centers. Left: The group tours the Bldg. 8A control room for photographic hazardous waste storage tanks. Each underground tank and line has a secondary containment system, and leaks can be detected and located on the control panel. Above: Sandy Olliges of Ames Research Center looks at a hazardous waste drum at Bldg. 358. With her is her daughter, Siobhan, carrying an infant doll.

Center will be reasonable, but firm about new policy

(Continued from Page 1) wouldn't work. If you are afraid to tell people you are trying to quit, then chances are you probably aren't ready. I knew I was going to have to put some pressure on myself in order to have a chance of arresting this habit, so of course that's why I went out and got 16,000 of my closest friends to watch my very public cessation ritual.

There are a few other loose ends I'd like to tie up in this last column. First, in answer to the most oft-asked question, yes, JSC Director Aaron Cohen does plan to abide by his policy and will not be smoking a pipe at JSC come Jan. 1. He wanted me to tell you that.

Second, Center Ops has ordered 130 butt snuffers for placement near the entrances to almost every JSC building. They are for smokers to use once the new policy takes effect, and my humble advice would be that you use them. I have learned that no one wants to be difficult, but there will be little patience for butts on the lawns and sidewalks. And if the butt snuffers aren't where you would like, or if you find that your favorite smoking spot has been omitted, give Tom Howell of the Special Purpose Maintenance and Services Office a call at x33208.

A third point is just a logical question that occurs. When does leaving the office to catch a smoke become a lost time problem for the

office, and at what point does this become a legitimate issue? Those of you on both sides will be happy to learn, I hope, that Human Resources is trying to take a reasonable approach to these and other questions.

"We don't believe this is going to be an issue," said Jack Lister, Director of Human Resources. "We are going to let each employee make arrangements with their supervisor. We believe our employees are professionals and we are going to treat them that way." Lister added that if an employee believes his or her supervisor is being unreasonable, there will be recourse. Talk to your personnel management specialist.

The folks in Human Resources really want to help you on this one.

I'd like to wind this up with one last short sermon. Throughout this process, I've gotten a very powerful sense of just how many people care, and how deeply. And not just friends, but total strangers, as well. Just a few days into my own whiny melodrama, I got a letter whose words rose up off the page and grabbed me by the ears. It was powerful and it got my attention. Some weeks later, I realized that the power of the letter came from two equal and opposite reactions. First, someone gave enough of himself to sit down and write it. Second, I was ready to read it.

"I have cancer," the letter began. "Not the same that comes from smoking. I quit 10 years ago. But cancer nonetheless. The day I heard the news I would have traded for a few days of withdrawal symptoms if it meant an assurance of survival. I can't describe the fear, and the loneliness, I experienced. I must have missed denial and blame."

This new friend of mine went on to describe some of the experiences that cancer can bring, and then wrote, "I tell you these things because I wish for you and your friends a life without qualification. If I could help you avoid what I've gone through, I'd try. I guess this is my first attempt. Keep strong."

Orbital rendezvous colloquium Dec. 14

A newly formed history committee of the local American Institute of Aeronautics and Astronautics chapter is seeking participants, information and materials for a colloquium on orbital rendezvous.

The colloquium is planned for Dec. 14, the day before the 25th anniversary of the first orbital rendezvous of two spacecraft. On Dec. 15, 1965, Gemini 6 Astronauts Walter Schirra and Thomas Stafford successfully rendezvoused their spacecraft with the Gemini 7 capsule containing Astronauts Frank Borman and James Lovell.

The successful rendezvous was a watershed event in the history of the program, beginning the development of techniques and procedures necessary for manned lunar landing missions, Skylab, the Apollo/Soyuz Test Project, space shuttle satellite repair and future missions.

The colloquium, which will be from noon-5 p.m. in Teague Auditorium, is designed to capture knowledge of early rendezvous design and operations and retain it for use in the design of future rendezvous operations and use as a training resource.

Anyone involved in the early days of rendezvous design or who has documentation or memorabilia is encouraged to contact Jim Oberg at x38014 or send materials to mail code DM43.



SILENT SISTERHOOD—Artist Molly Springer, the wife of STS-38 and STS-29 Astronaut Bob Springer, is looking at the people on the periphery of human space flight in a new series of paintings. This one, entitled "Silent Sisterhood," reflects the astronaut spouse's perspective, featuring her STS-29 comrades and the signs that surround shuttle launches. The signs help to depict the conflicting emotions felt by the spouses who support, then watch and wait while astronauts fly in space. Featured, from left, are Springer, Jean Buchli, Brenda Blaha, Tandi Bagian and Diane Coats.

Illustration by Molly Springer

Galileo makes course change for Earth flyby

The Galileo spacecraft fired its thrusters earlier this week, readying for a Dec. 8 Earth flyby that will propel it toward a 1995 rendezvous with Jupiter.

The next-to-the-last trajectory correction maneuver occurred Tuesday. The final course correction maneuver, planned for Nov. 28, will correct any imperfections in Galileo's trajectory prior to its first of two Earth flybys.

Tuesday's maneuver will enable the spacecraft to fly closer to Earth in December when it uses the planet as a gravity slingshot in its journey to Jupiter.

Operated by NASA's Jet Propulsion Laboratory, Galileo began its 2.4 billion mile mission on Oct. 18, 1989, when it was launched from the Space Shuttle *Atlantis*. During the course of its journey, Galileo will travel about 593 miles above the southwest Atlantic Ocean on Dec. 8. That flyby will enlarge the spacecraft's orbit around the Sun and propel it toward the solar system's largest planet, Jupiter.

Galileo will study Earth during the flyby and during a similar maneuver in December 1992, making it the first spacecraft to approach Earth from interplanetary space. It will take photographs, measure gases that cause climate warming and look at the hole in the Earth's protective ozone layer above Antarctica. It also will look at the dark side of the Earth's Moon.

Elsewhere in the solar system, Magellan passed the point of superior conjunction last week. Superior conjunction is the moment when an inferior planet, in this case Venus, lies directly behind the Sun as seen from Earth. Mapping operations were suspended while the Sun interfered with high data rate communications, but the Deep Space Network continued to receive telemetry communications. Mapping resumed Saturday. Magellan scientists will brief the press on preliminary mission results at noon CST today at JPL. The briefing will be televised on NASA Select.

Another interplanetary traveler, Ulysses, this week will conclude the final switch-ons of its nine instruments. The spacecraft is designed to study three major topics in solar physics - the Sun, the solar wind, and interstellar space.

Ground controllers have continued to study a slight wobble that has been noticed in the spinning spacecraft since the deployment of its axial boom nine days ago. The motion - just under half a degree from side to side - does not affect spacecraft operations or radio communication. However the mission team is considering possible corrective action.

Technology 2000 to feature JSC contributions

(Continued from Page 1)

Savely, chief of the Software Technology Branch, and Dr. R Bowen Loftin, a professor at the University of Houston, while Gary Riley, a computer engineer in the Software Technology Branch presents a session on "CLIPS: A Tool for the Development and Delivery of Expert Systems."

Other sessions with JSC participants will be "Software Reengineering," with Ernest Fridge, deputy chief of the Software Technology Branch; "Applications of Fuzzy Logic to Control

and Decision Making" with Robert Lea, an aerospace engineer, and Dr. Yashvant Jani, Senior Corporate Scientist of Lincom Corp.; and "Genetic Algorithms" with Lui Wang, an engineer at JSC.

The conference and exposition also will feature more than 150 exhibitors representing the space agency's field centers, major contractors, spinoff companies, non-aerospace high-tech firms, state technology transfer offices, university research centers, Small Business Innovation Research contract

recipients and NASA Centers for the Commercial Development of Space.

In a special session, information will be presented on how industry can gain access to new and emerging technologies through the NASA Technology Utilization Division.

JSC's Public Services Branch coordinated the graphics schemes for all of the agency's Technology Utilization Offices' exhibits.

Keynote speaker for the conference will be Dr. D. Allan Bromley, Assistant to the President for Science and Technology.

Second Shuttle Carrier Aircraft to join NASA fleet next week

(Continued from Page 1)

reliably and effectively, it is certain that plans for increased flight rates will benefit from the acquisition of a second SCA. That prospect was also realized in 1986 by the Rogers Commission which, in its formal recommendations, suggested "increased landings at Edwards

may necessitate a dual ferry capability."

According to JSC Flight Crew Operations chief Don Puddy, "The addition of a second carrier will greatly enhance the reliability of our ferry operations, and eliminates a single point failure from the program."

In its former operational life, this particular jumbo jet served as a domestic passenger carrier for Japan Air Lines. Acquired for NASA by Boeing in 1988, the aircraft was found to be in excellent condition and NASA contracted with Boeing for modifications and delivery within two years.

All interior furnishings and equipment aft of the forward doors was removed. Structural bulkheads were installed and fuselage skin reinforced for added support of the shuttle attachment struts. The attachment struts were located atop the aircraft to match orbiter/external tank fittings. Two vertical stabilizers were added,

one on each end of the existing horizontal stabilizers, to enhance directional stability. Following completion of the structural work, the airplane was delivered to Chrysler Technologies in Waco, Texas, for its blue-on-white paint job. The freshly painted jumbo jet was flown back to Wichita on Nov. 13.

Financing coming together

(Continued from Page 1)

The budget action earmarks the \$10 million for operation and maintenance of the new facility and specifically prohibits the federal money from being used for construction, Stall said. The money will be used to develop exhibits.

The \$50 to \$60 million letter of credit from Mitsubishi Bank, Tokyo, will take the place of a similar facility the Foundation had hoped to obtain last January under an agreement with Citicorp. The New York bank unexpectedly withdrew its commitment leaving the Foundation without financing until Mitsubishi stepped in. Under the arrangement currently being struc-

ture, MSFEFI will pay Mitsubishi a fee for a letter of credit which will be used to back tax-exempt bonds offered to American investors, Stall said.

"We're working as rapidly as possible and the bank is eager to close financing at the earliest date" he added.

About \$13 million already raised through private pledges and corporate sponsorships rounds out Space Center Houston funding.

Walt Disney Imagineering is designing the center to give visitors "hands-on" experiences that will bring the challenges and benefits of America's space program down to Earth for the people who have supported it.

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STS-38 welcome home ceremony details pending

A welcome home ceremony for the STS-38 crew is being planned at Ellington Field, but because of the classified nature of the mission the exact day and time weren't immediately available.

The ceremony outside Hangar 990 will begin about seven hours after *Atlantis* lands at Edwards Air Force Base in California. When the exact day and time of the ceremony become available, they will be reported on the Employee Information Service, x36765.

Cafeteria hours for the mission also have been set. The Bldg. 3 cafeteria will be open from 7 a.m. to 4:30 p.m. weekdays, weekends and holidays. The Bldg. 11 cafeteria will be open from 6:30 a.m. to 2 p.m. weekdays only.

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